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much like *adunca*, but has fewer and longer appendages and sometimes sporangia with five or six spores.

STAINING VEGETABLE TISSUES. — L. Erckmann explains, in the "Journal of the Franklin Institute," that the staining of plant sections with a weak solution of aniline red, and then washing out with water the color from all the non-nitrogenous parts, is not only useful for purposes of general study, but is especially applicable in the preparation of specimens for photographic use.

NOTES.

A semiannual session of the National Academy of Science was held at Cambridge, November 21st, 22d, 23d, in the lecture room of the Museum of Comparative Zoology, where Professor Agassiz welcomed the members, and gave an account of the rise and present condition of the museum. Of the twenty-eight papers read there were presented thirteen relating to geology and zoology, with the following titles:—

The Organization of the Museum of Comp. Zoology in Cambridge, by L. AGASSIZ.
On three different Modes of Teething among Selachians, by L. AGASSIZ.
The Development of Actiniæ, by ALEX. AGASSIZ.
The glacial Phenomena of the southern Hemisphere compared with those of the North, by L. AGASSIZ.
Affinities of Echinoderms and Worms, by A. AGASSIZ.
Notice of Investigations making in California on the Reliability of the Barometer as a hypsometric Instrument, by J. D. WHITNEY.
Pedicellariæ of Echinoderms, by A. AGASSIZ.
Results of recent Dredgings on the coast of New England, by A. E. VERRILL.
Embryological Fragments concerning the Volutidæ, by L. AGASSIZ.
On the specific Identity of some Animals along the Atlantic and Pacific shores of America, by L. AGASSIZ.
The copulatory Organs of the Selachians compared with one another, and with those of other Vertebrates, by L. AGASSIZ.
On the changes Selachians undergo with age, by L. AGASSIZ.
Critical remarks about scientific views entertained upon theoretical grounds, by L. AGASSIZ.
Notice of the progress of the topographical work of the Geological Survey of California, by J. D. WHITNEY.

Professor Agassiz read a paper on "Three Different Modes of Teething among Selachians." He said that in former years he had paid considerable attention to the peculiarities of teeth among the Selachians, but the progress of zoology and palæontology made the present materials on hand quite insufficient. It was not known what changes took place with age. So he had determined upon the voyage of the Hassler to make the collection of Selachians a principal object. He had been richly rewarded for his efforts. Since his return he had made careful examination of the collection, comprising sometimes two hundred specimens of one species. The result of this examination was that while in their adult condition the Selachians present characters which are very constant among specimens of the same age, there are such changes among them that even genera have been founded on the difference of age. Professor Agassiz then illustrated from abundant specimens and upon the blackboard the variations of dentition in Selachians of different ages from the embryo to the adult. In concluding he alluded to the relation which the facts of variation he had presented might falsely be supposed to sustain to the development theory. The conditions which occupied a certain place in the series to be derived one from another should be consecutive in time. This was not the case. It was the endless series of anachronisms which were being made by the supporters of the transmutation doctrine which had kept him aloof from all such interpretations of Nature. When it should appear that these different features fall in time as they may appear to fall in their connection by similarity, then there would be some ground for the inference of a gradual change. Geologists ought to be as careful in their generalization as were physicists. He thought that there was too much loose twaddle and argument and debating-club demonstration in our Natural History. He had been told recently by one who occupies a very high position in science that " unless you deduce one being from another you are not following a legitimate scientific course." It should first be proved geologically that there is such a genealogical connection. The facts show, indeed, something that should not be overlooked, viz.: that there is thought in nature, and until it is proved that thoughts are derived one from another, he would not admit that the similarity of two objects proves their derivation one from the other.

Mr. Alexander Agassiz made a communication on the " Development of the Actiniæ."

The second day's session opened with an account of the glacial phenomena of the southern hemisphere compared with those of the north, by Prof. Agassiz. Any one who had been familiar with the glacial phenomena as exhibited in the northern hemisphere, both in Europe and the United States, and who would have accepted, even with considerable limitation the general conclusions he had presented concerning the glacial period, might have foretold, said Prof. Agassiz, that the southern hemisphere would present the counterpart of all these phenomena. And yet he supposed that many of his friends thought he was over-sanguine when, in a letter to the Superintendent of the Coast Survey, he had told what he expected to find, in this matter, during the Hassler Expedition. The hesitation which was prevalent concerning these generalizations arose from the view which many entertained of the true cause of the phenomena. Many thought that the greater extension of glaciers in the Alps and most parts of Europe was to be ascribed to the former existence of large sheets of water in the north of Africa, from the evaporation of which great amounts of snowy deposition could be formed upon the Alps, and thus enlarge the glaciers. But he would ask those who entertained this view how a sheet of water in Africa could have made great sheets of ice upon the continent of North America? There had been a disposition more or less outspoken among geologists to view the phenomena of the greater extension of glaciers in a former period as the result of local glaciers. He believed he was the only one among investigators of that subject who had urged a distinction between local glacial phenomena and the general glaciation of our continents. It was because he was familiar with the distinction between these two sets of facts that he had always held, from the very beginning of his investigations, that there was a time when our earth presented climatic conditions so totally different from those now obtaining, that the northern hemisphere was covered by an extensive sheet of ice, and that the phenomena to be ascribed to the agency of that sea of ice moving from north southward were those uniform glacial appearances which we find over continental expanses, and traces of which we find even in high elevations. He had been convinced that whoever should explore the southern hemisphere on an extensive scale would find the evidence from extensive glaciation on the southern hemisphere as well as on the northern, but that the trend of the southern ice sheet and the transportation of bowlders would be reversed. Instead of moving from the north southward as in the northern hemisphere, the movement should be from the south northward, and the accumulations of loose materials in southern moraines should present an arch curving northward. He could say that he had seen in the southern hemisphere all that he had expected to find. The occurrence of these phenomena on a large scale in the southern hemisphere tended at once to establish the fact that the glacial phenomena were cosmic phenomena, and were not owing to local geological occurrences. He contended that the ability to recognize glacial phenomena depended in a great measure upon thorough familiarity with it, there were so many elements to be taken into account. Yet the track of the glacier could be detected as certainly as the hunter detects the track of his game. Causes of deception in interpreting the glacial phenomena were pointed out in detail. He showed the distinction between local glacial phenomena and phenomena belonging to general glaciation. The evidence obtained from erratic bowlders was examined and apparent contradictions explained. In some of the New England regions he had traced the tracks of bowlders for seventy miles in unbroken continuity. In the southern hemisphere he had traced them over a much longer distance.

He would make a statement which he expected would not be accepted for many years; it was that all our mountains below eleven thousand feet had all been scored over by the great sea of ice; that the whole range of the Rocky Mountains had been under ice, with only a few prominent peaks, perhaps rising above the fields of ice. He thought that the great ice sheet could not have been less than ten or twelve thousand feet thick and might have been thicker. In the Andes he had become acquainted with signs of glacial action twelve thousand feet above the sea.

Prof. J. D. Whitney, State Geologist of California, read a paper on "Notice of Investigations making in California on the reliability of the barometer as a hypsometric instrument." His remarks were illustrated by charts and tables.

Prof. Agassiz and Prof. Hilgard followed in remarks commending the geological survey of California as a work of great national importance, and hoping that the Academy would use its influence to prevent its interruption.

Prof. A. E. Verrill gave an interesting account of results of dredging on the coast of New England in connection with the United States Fish Commission. The explorations had added at least three hundred and fifty species to the fauna. Among the polypes prior to this investigation there were known but twelve species. They had added seven species. They had added thirty-eight species to the forty-eight Acalephs; ten species to the Echinoderms; ninety-five to the mollusks, one hundred and twenty-five to the worms and ninety to the crustacea. Additions to the Echinoderms and others were mentioned.

The second day's session was concluded by remarks by Prof. Agassiz about "Scientific Views entertained upon Theoretical Grounds." Prof. Agassiz' remarks were a protest against hastily adopting scientific theories unsupported by sufficient matter-of-fact evidence. He felt more and more the danger of stretching inferences from a few observations. The manner in which the evolution theory in zoology is treated would lead those who are not zoologists to suppose that observations have been made by which it can be inferred that there is in nature such a thing as a gradual change among organized beings, and that the transformation has actually been traced. But there is no such record, and it is shifting the grounds from one field of observation to another to make such statements. When the assertions go so far as to exclude from the domain of science those who will not be dragged into the mire, he thought it time to protest.

On the concluding day of the session Mr. Alex. Agassiz spoke on the Affinities of Echinoderms and Worms, and Prof. Agassiz on the Reproductive Organs of the Selachians compared with one another and with those of the Vertebrates.

AT a meeting of the Indianapolis Academy of Science, Prof. E. T. Cox exhibited a meteorite about four pounds in weight, found by Dr. Seville, in 1870, in the plastic clay under a bed of peat in Howard County, Indiana, about seven miles east of Kokomo.

MR. G. R. CROTCH is engaged in preparing a checklist of the Coleoptera of North America to facilitate exchanges and records of faunas. It will make a pamphlet of about 70 pages, to cost 50 cents, and will be published by the Naturalists' Agency. Subscriptions are requested that the size of the edition may be at once determined on.

GEORGE CATLIN the well known Indian painter and student of Indian character and customs, died at Jersey City, on December 23d, in the seventy-sixth year of his age.

A REPRINT of the late Dr. Clemens' papers "On the Tineina of North America," with notes by the editor, H. T. Stainton, Esq., has just been published by Van Voorst, London.

MR. EDWARD WHYMPER has arrived at Copenhagen from his second exploration of W. Greenland. He brings with him rich collections of curiosities, and some singular specimens of fossil wood.

PROFESSOR AGASSIZ has recently been elected a foreign associate of the French Institute (Academy of Sciences). It may be remembered that the number of foreign associates of the Academy of Sciences is limited to eight.

WE are glad to learn that Mr. Charles Stodder has saved from the conflagration of November 9th, all his valuable stock of Tolles's telescopes, microscopes, and microscopic objectives. Work in the shop will go on, and all orders filled as usual.

ANSWERS TO CORRESPONDENTS.

J. M., Penn.—The glass paraboloid, "Wenham's Parabola," has been prominently brought forward as a means of transparent illumination with high powers, by Chevalier Huyttens de Cerbecq, of Brussels. As thus used it gives excellent definition with a well corrected lens, but fails completely with a poorly corrected one.—R. H. W.

R. M. D., New York.—It would probably be undesirable to have all objectives mounted in brasswork of exactly the same length measured from the focal point of the objective to the top of the mounting. The convenience attained in working with the straight form of a double-nose piece would not compensate for the disadvantage of wearing the rack almost entirely at one point. A general uniformity of length of compound body, however, is greatly to be desired.—R. H. W.

W. W. R., Indiana.—1. The best microscopical definition attainable at present is by means of "immersion" lenses. 2. They are practically as durable as dry lenses, since both will last, with frequent but careful use, until rendered obsolete by the improvements constantly being made in their manufacture. 3. They are not more liable than other objectives to injury by changes of temperature, etc. 4. Several first-class makers have been accustomed for many years to furnish immersion objectives which can be instantly transferred, by screw-collar adjustment, to dry objectives. Thus the owner has a choice of style, with no compensating disadvantage.—R. H. W.

BOOKS RECEIVED.

Verhandlungen der K. K. geologischen Reichsanstalt. Nos. 1-6. 1872. 8vo.

Jahrbuch der K. K. geologischen Reichsanstalt. Bd. xxii. No. 1. Jan.-March, 1872. 8vo.

Bericht ueber die Thatigkeit der St. Gallischen naturwissensch. Gessellschaft. 1870-71. 8vo. 1872.

Proceedings of the Royal Society of Edinburgh. 1870-71. 8vo.

Annales Academici, 1867-68. Leyden, 1872. 4to.

Sitzungsberichte der K. Akadamie der Wissenschaften. Math. Naturw. Classe. Bd. lxiv. Abth. 1. Heft i-v. Abth. 2. Heft i-v. 8vo. Wien. 1871.

Denkschriften der K. Akademie der Wissenschaften. Math. Naturw. Classe. Bd. 31. Wien, 1872. 4to.

Sitzungsberichte der Naturwissensch. Gesellschaft Isis in Dresden. Jahrg. 1872. Jan.-March. Dresden, 1872. 8vo.

Memoires de la Societe Royale des Antiquaires du Nord. 1866-71. Copenhagen. 8vo.

Transactions of the Literary and Historical Society of Quebec. 1871, 1872, Quebec. 8vo.

Proceedings of the Boston Society of Natural History. Vol. 14, pages 225 to end. 8vo. 1872.

Memoirs of the Boston Society of Natural History. Vol. 2, part 2, No. 3; part 2, No. 1; and Part 2, No. 2. 4to. 1872.

Proceedings of the Academy of Natural Sciences of Philadelphia. Part 2. May and Sept., 1872. 8vo.

A New Theory of the Origin of Species. By B. G. Ferris. 12mo, pp. 69. New Haven, Chatfield and Co. 1872.

On the Fossil Red Hematite Ore of Bedford Co., Penn. By J. P. Kimball. 8vo, pp. 22. 1872.

On the Silver Mines of Cusihuiriachic, Mexico. By J. P. Kimball. 8vo, pp. 11 and map. 1872.

Report on the Fairchauer Iron Company Estab. By J. P. Kimball. 8vo, pp. 28. 1872.

Le Naturaliste Canadien. Quebec, Dec. 1872. *Petites Nouvelle Entomologiques.* Paris. No.
Feuille des Jeunes Naturalistes. Paris. No. 64. Dec., 172.
29. Dec., 1872.